



SMITHSONIAN

Ages 8 and up

# Gummy Bug Lab

No. 3263-08

Conforms to ASTM-D4236

**Dear Customer,**

NSI is the manufacturer of this kit. We hope you enjoy our Gummy Treats Lab. If you find that we have made an error or if something is missing or damaged, let us know so that we can correct the problem for you. Please include the following:

- Name of item
- Date of Purchase
- Purchase Price (please include sales slip)
- Model number
- Place of Purchase
- Brief description of the problem

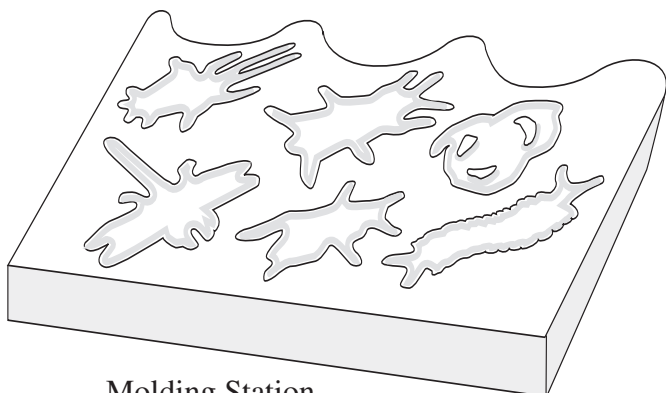
Do not return the kit to the store where you purchased it, or contact the Smithsonian. They will not have replacement parts!

Send all correspondence to: **NSI International, Inc.**

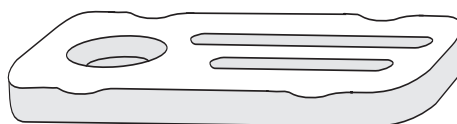
150 Price Parkway, Farmingdale, NY 11735

Attn: Quality Control Department

## YOUR SET INCLUDES THE FOLLOWING ITEMS:



Molding Station

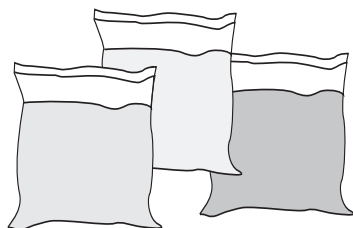


Mixing Station

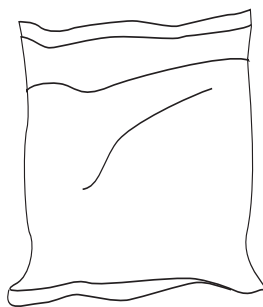
*(Holds the mixing cup and tools)*



Pipette



Cherry, Lemon and Berry  
Flavored Food Coloring  
(3.54 grams each)



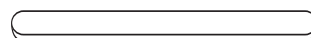
Gummy Mix  
(60 grams)



Mixing Cup



Measuring  
Cup



Mixing Stick

**Important:** Wash all components with warm water and soap before starting this project.

## ABOUT THIS KIT

Humans have five senses that help them learn about the environment. Sensory receptors, found in the organs of taste (tongue), smell (nose), sight (eyes), hearing (ears), and touch (skin), are highly specialized to receive different kinds of information. They transmit messages to the brain constantly.

### TASTE

The tongue is covered with taste buds, giving it a rough texture. These taste buds sense an enormous number of different flavors, but the flavors are just combinations of four distinct tastes: sweet, salty, sour, and bitter. The front part of the tongue detects sweetness. Slightly behind the "sweet" taste buds are the salt detectors, and behind those are the receptors of sour tastes. The back of the tongue senses the bitter flavors. When the tongue is dry, the taste buds are less sensitive.

*Close your eyes and put a Gummy Bug on your tongue. Move it around a little bit and try to guess the taste. Is it sweet or sour? What part of your tongue detected the taste?*

### SMELL

Inside the nose are tiny organs that can detect thousands of different smells. The nose is very important for distinguishing tastes. When the nose is blocked by a cold or allergy, food does not taste right.

*Hold your nose and put a Gummy Bug on your tongue. Is it easier or harder to guess the taste when you can't smell?*

### SIGHT

The eye works a little like a camera, with the iris opening and closing like a shutter to control the amount of light that enters through the pupil. However, instead of producing printed photographs,

the eye sends images to the brain. Human eyes face forward and have an overlapping field of vision, allowing us to see a single image of an object with both eyes. This provides depth perception, or the ability to judge distance and spatial relationships of objects.

*When you look the Gummy Bugs, do they look like something good to eat? Can you tell what flavor each bug will be just by looking at its color?*

### HEARING

The hearing system is made up of three parts. The ear helps catch sound waves. Inside the ear canal is the eardrum, which vibrates when sound waves hit it. Three tiny bones on the inside of the eardrum sense the vibrations and transmit them to the inner ear, which sends the sound signals to the brain.

*Your ability to hear doesn't really affect the flavors you detect in your food. But what if the Gummy Bug started making a squeaking or buzzing noise just as you were putting it in your mouth? Would you change your mind about eating it?*

### TOUCH

Humans learn a lot about their world by touching things. That's why babies are always reaching to touch or grab objects. After a while, you learn to identify some things by the way they feel. For instance, a kitten has soft fur, and an ice cube is cold and wet.

*Try adding a drop or two of water to a Gummy Bug, and put it on your tongue. Does it feel slippery? Freeze a couple of Gummy Bugs and then perform the taste and smell experiments above. Does the temperature make a difference? Do they taste better when they are solid or when they are squishy?*

## GUMMY BUGS

### Before you begin:

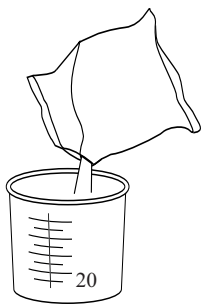
1. Wash all trays, cups and mixing tools with warm water and soap. Rinse and dry thoroughly.
2. Select a flat work area such as a counter or table to mix the Gummy Bugs. Cover your work surface with wax paper or paper towels to catch any drips or spills.
3. The packets of Gummy mix and food flavorings have to be cut open with a pair of scissors. With adult supervision, cut the top of the bag of Gummy Mix and one bag of food flavoring.  
*Note: a rubber band or a piece of tape can be used to re-seal the bag of Gummy Mix after each use.*
4. Before filling the Gummy molds, it is a good idea to lightly coat the inside of the molds with cooking spray to make it easier to remove the finished Gummy Treats. Prepare all molds before starting the project.
5. An extra small cup or bowl will be needed to hold the measured gummy mix. Have one ready before starting.

### CAUTION:

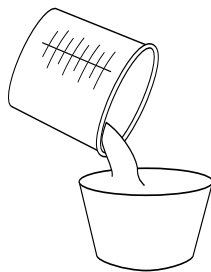
**Food coloring may stain fabrics. Keep food coloring away from carpeting, upholstery and clothing.**

# GUMMY BUGS

Read all directions and cautions on the bottom of page 2.  
Have all tools and molds prepared and ready to use before starting this project.



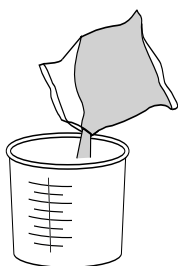
1. Pour 20 grams of Gummy mix into the large mixing cup. Use the markings on the side of the cup to measure.



2. Pour the measured Gummy mix into any clean cup or bowl and set aside for a later step. Wash and dry the mixing cup.



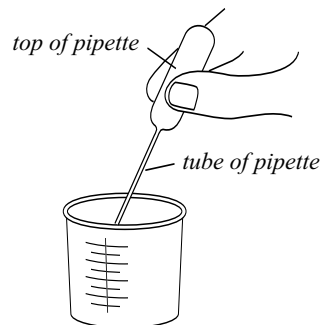
3. Measure 1 ounce of hot tap water in the small measuring cup. Pour the 1 ounce of water into the empty mixing cup.



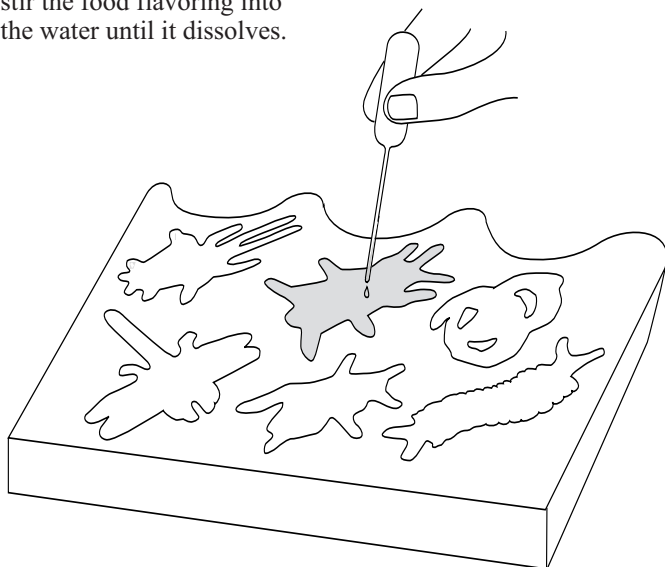
4. Pour one entire packet of food flavoring into the mixing cup. Use the mixing stick to stir the food flavoring into the water until it dissolves.



5. Add the measured Gummy Mix (saved in step 2) into the mixing cup. Use the mixing stick to stir it all together. This mixture will harden quickly, so proceed directly to the next step.



6. Squeeze the top of the pipette between your thumb and forefinger, then dip the tube of the pipette into the gummy mixture. When you release your hold on top, the tube will fill with the mixture. As long as you do not squeeze the top again, the mixture will stay in the tube.



7. Squeeze the top of the pipette to release the mixture into the prepared molds. Fill each mold to the top. Once the Gummy Bugs have set, they can be pulled out of the molds.

## HINTS:

- Flavored food colorings can be mixed together for different results.
- Filled molds can be refrigerated to speed up the setting time. Gummy Bugs will harden in about 15 minutes in the refrigerator.
- Remember to wash and dry all trays and tools after using. Do not allow any extra mix to remain in the measuring cups or on the tools.
- To clean the pipette, squeeze warm soapy water inside tube and rinse.

Remember, you are creating food! Keep your work area, mixing tools and your hands especially clean.

# The Smithsonian Institution

The Smithsonian Institution is home to more than 141 million objects, ranging in size from insects and diamonds to locomotives and spacecraft. It is the world's largest museum complex, comprising 15 museums and galleries and the National Zoo in Washington D.C., and two additional museums in New York City. Millions of visitors each year visit the nation's capital to view such treasures as the Hope Diamond, the Star Spangled Banner, and the Wright Flyer. A broad range of exhibits provides a fun and educational experience for young and old alike.

One of the world's leading scientific research centers, the Institution has facilities in eight states and the Republic of Panama. Research projects in the arts, history, and science are carried out by the Smithsonian all over the world. Some of the Smithsonian's research centers include the Smithsonian Astrophysical Observatory in Cambridge, Massachusetts, the Smithsonian Marine Station at Link Port, in Florida, and the Smithsonian Tropical Research Institute, in Panama.

For membership information or pre-visit planning material, write or call the Visitor Information and Associates Reception Center, Smithsonian Institution, Washington D.C., 20560, (202) 357-2700 (voice), (202) 357-1729 (TTY). You may also visit the Smithsonian through our web site, [www.si.edu](http://www.si.edu).

## History

James Smithson (1765-1829), a British scientist, drew up his will in 1826 naming his nephew, Henry James Hungerford, as beneficiary. Smithson stipulated that, should the nephew die without heirs (as he did in 1835), the estate would go to the United States to found "at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge..."

On July 1, 1836, Congress accepted the legacy bequeathed to the nation by James Smithson, and pledged the faith of the United States to the charitable trust. In 1838, following approval of the bequest by the British courts, the United States received Smithson's estate—bags of gold sovereigns—then the equivalent of \$515,169. Eight years later, on August 10, 1846, an Act of Congress signed by President James K. Polk established the Smithsonian Institution in its present form and provided for the administration of the trust, independent of the government itself, by Board of Regents and Secretary of the Smithsonian.

## Smithsonian Museums, Galleries and Zoo

Smithsonian Institution Building ("Castle")  
 Anacostia Museum  
 Arthur M. Sackler Gallery  
 Arts and Industries Building  
 Cooper-Hewitt, National Design Museum  
 Freer Gallery of Art  
 Hirshhorn Museum and Sculpture Garden  
 National Air and Space Museum  
 National Museum of African Art

National Museum of American History, Behring Center  
 National Museum of the American Indian  
 National Museum of Natural History  
 National Portrait Gallery  
 National Postal Museum  
 National Zoological Park  
 Renwick Gallery  
 S. Dillon Ripley Center  
 Smithsonian American Art Museum

### REFILL PARTS FOR ITEM NO. 3263-08 GUMMY TREATS LAB

		Number of sets	Total Price
3263-01 Gummy Mix . . . . .	\$ 2.10	_____	\$ _____
3263-02 Cherry Flavoring . . . . .	\$ 1.00	_____	\$ _____
3263-04 Berry Flavoring . . . . .	\$ 1.00	_____	\$ _____
3263-05 Lemon Flavoring. . . . .	\$ 1.00	_____	\$ _____
3263-13 Mixing Station . . . . .	\$ .50	_____	\$ _____
3263-14 Molding Station . . . . .	\$ 1.95	_____	\$ _____
2860-05D Pipette . . . . .	\$ .15	_____	\$ _____
2890-11 Popsicle Stick. . . . .	\$ .05	_____	\$ _____
7733-05 1 oz. Measuring Cup . . . . .	\$ .25	_____	\$ _____
2890-05 5 oz. Measuring Cup . . . . .	\$ .25	_____	\$ _____

Mailing label: Please print clearly

Name \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Add shipping and handling: **\$ 4.00**

Total amount enclosed: \$ \_\_\_\_\_

*Allow two extra weeks for check processing*

### We also accept Visa or Mastercard

Name of card \_\_\_\_\_ Exp. \_\_\_\_\_

Card No. \_\_\_\_\_

Signature \_\_\_\_\_

Mail this form with check, money order or credit card info to:

**NSI International, Inc.**  
**150 Price Parkway**  
**Farmingdale, NY 11735**